US Army Medical Research and Materiel

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Self-piercing Pulse Oximeter Sensor Assembly

This invention provides a self-piercing pulse oximeter sensor capable of attachment to either an individual or an animal through a pierced body part. The device includes a flexible pulse oximeter sensor, an earring post, and a grommet. The earring post may be used as a piercing device if a pierced body part suitable for attaching the pulse oximeter sensor to the body is not available. Otherwise, the earring post may be slid into the pierced hole. In either case, the tip of the earring post engages a grommet once it passes through the body part. Thus, the pulse oximeter sensor functions in a transilluminance mode by transmitting light through the pierced body part.

Attaching the pulse oximeter sensor to the ear usually occurs in a case where the patient is missing his/her digits, *e.g.,* is an amputee, or severely injured, or in the case of significant burns covering the body such that the placement of the pulse oximeter sensor on a peripheral body part is very difficult. However, monitoring via the ear has been tenuous at best in the past, as the previous methods for securing a pulse oximeter sensor to the ear were haphazard and unreliable.

There are times when a patient will need to move while having a pulse oximeter sensor attached. An example of this is when a wounded soldier needs to remain in battle with his or her hands free to fight and/or operate equipment while being monitored. Other examples include laboratory testing and monitoring of the physiological status of an individual being studied, or during a patient being moved under emergency or battlefield conditions.

Features and advantages:

- **Provides a stronger, more fixed attachment of a pulse oximeter sensor than other assemblies**
- **Allows optimal freedom of motion of the hands of an individual**
- **Enhanced stability allows for better quality recordings of data signals and better patient care**

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KEYWORDS: Alternative oximetry; difficult to monitor; self-piercing

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